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Particle creation by a black hole as a consequence of the Casimir effect

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Abstract

Particle creation by a black hole is investigated in terms of temperature corrections to the Casimir effect. The reduction of the Hawking effect to more familiar effects observed in the laboratory enables us to reveal the mechanism of particle creation. The blackbody nature of the Hawking radiation is due to the interaction of virtual particles with the surface of a "cavity" formed by the Schwarzschild gravitational field potential barrier. These particles are "squeezed out" by the contraction of the potential barrier and appear to an observer at J+ as the real blackbody ones. © 1987 Springer-Verlag.

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